APPLICATION

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TITLE: TELEVISION CHAT ROOMS

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<u>Television Chat Rooms</u>

Technical Field

5   This invention relates to selecting a television channel.

Background

The computer system illustrated in Fig. 1 represents a typical hardware setup for executing software that allows

10   a user to perform tasks such as communicating with other computer users, accessing various computer resources, and viewing, creating, or otherwise manipulating electronic content -- that is, any combination of text, images, movies, music or other sounds, animations, 3D virtual worlds, and

15   links to other objects. The system includes various input/output (I/O) devices (mouse 103, keyboard 105, display 107) and a general purpose computer 100 having a central processor unit (CPU) 121, an I/O unit 117 and a memory 109 that stores data and various programs such as an operating

20   system 111, and one or more application programs 113.

As shown in Fig. 2, a user of a computer system can access electronic content or other resources either stored locally at the user's own client system 202 (e.g., a personal or laptop computer) or remotely at one or more

25   server systems 200. An example of a server system is a host computer that provides subscribers with online computer services such as e-mail and Internet access. Users of a host computer's online services typically communicate with one or more central server systems 200 through client

30   software executing on their respective client systems 202.

In practice, a server system 200 typically will not be a single monolithic entity but rather will be a network of interconnected server computers, possibly physically dispersed from each other, each dedicated to its own set of

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duties and/or to a particular geographical region. In such
a case, the individual servers are interconnected by a
network of communication links, in known fashion. One such
server system is "America Online 4.0" from America Online,

5   Incorporated of Virginia.

Fig. 3 is a screen shot of a "browser" application
300 (Internet Explorer) displaying a typical HTML document,
or web page 302. A "browser" is an example of client
software that enables users to access and view electronic

10   content stored either locally or remotely, such as in a
network environment (local area network (LAN), intranet,
Internet). A browser typically is used for displaying
documents described in Hyper-Text Markup Language (HTML) and
stored on servers connected to a network such as the

15   Internet.

A user instructs a browser to access an HTML
document, or web page, by specifying a network address -- or
Uniform Resource Locator (URL) -- at which a desired
document resides. In response, the browser contacts the

20   corresponding server hosting the requested web page,
retrieves the one or more files that make up the web page,
and then displays the web page in a window on the user's
computer screen.

As shown in Fig. 3, a single web page may be

25   composed of several different files potentially of different
data types 304 (e.g., text, images, virtual worlds, sounds,
movies, etc.). In addition, a web page can includes links
306, or pointers, to other resources (e.g., web pages or
individual files) available on the network. Each link has

30   an associated URL pointing to a location on the network.
When a user clicks on, or otherwise selects a displayed
link, the browser automatically will retrieve the web page
corresponding to the link's associated URL and display it to
the user.

As shown in Fig. 4, some server systems offer chat rooms that display user messages in real time. Client chat room software (e.g., America Online 4.0 and Internet Relay Chat) depicts a text window 402 that displays each message

5   submitted by users visiting the chat room. The client software also provides controls for entering a message and submitting the entered messages to the server system. The server system broadcasts each submitted message to the other chat room users for display on their respective text windows

10   402. Typically, chat rooms are named for discussion topics to help users to find chat rooms of interest.

Fig. 4 also shows a list of users 404 known as a "buddy list". A user creates a buddy list by entering the names of other server system users (e.g., friends, family,

15   or co-workers). The server can notify the user when the users in the buddy list log-on to the server system. The server can also provide other information such as which chat room the user is currently visiting.

Recently, a special purpose computer referred to as

20   a "set-top box" has been developed and used in connection with standard television (TV) sets for viewing web pages on the Internet. The term set-top box derives from the usual placement of the device on top of a television. The term, however, should not be construed literally. That is, a set-

25   top box may neither be a box nor be placed on top of a display. A set-top box essentially has the same basic components as the general purpose computer illustrated in Fig. 1, except that it also includes a TV tuner for receiving broadcast and/or cable TV signals. Users of such

30   "web TV" systems can make dual usage of their TV sets -- that is, either to watch TV or to view web pages and otherwise "surf" the Internet.

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The present inventors recognized that it would be desirable to create a link that automatically changes the channel of a set-top box when selected.

Summary

Various implementations of the invention may include one or more of the following features.

In general, in one aspect, the invention features a method of assigning a user to a network chat room. The method includes determining television programming viewed by a network user at a networked device and assigning the network user to a chat room corresponding to the determined television programming.

Embodiments may include one or more of the following features. Determining the television programming viewed by a network user may be based on a channel tuned to by the networked device. The network device may be a set-top box that receives television programming. The network may be the Internet. The chat room may be for a particular television show and/or a particular network. The method may further include receiving a message from a network user assigned to the chat room and distributing the received message to other chat room members. The method may further include determining whether to assign a person to a chat room, for example, by determining how recently the user was last assigned to a chat room.

In general, in another aspect, the inventor features a method of assigning a user to a chat room. The method includes providing a user interface that displays television programming, transmitting identification of the television programming to a network server, and presenting a chat room that includes messages received by the network server by other users viewing the same television programming.

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Embodiments may include one or more of the following. The television programming identification may be a channel number, a television network identifier, and/or an identifier of a particular television program. The

5   transmitting may be in response to a change of channel and/or user interaction with a user interface element.

In general, in another aspect, the invention features a system for assigning a person to a chat room. The system includes server software resident on a network

10   server and client software resident on a client. The server software includes instructions for distributing messages received by chat room members with other chat room members, instructions for providing chat rooms corresponding to different television programming, and instructions for

15   determining the television programming tuned to by a networked device that receives television programming, and assigning a network user using the set-top box to a chat room based on the determined television programming. The client software includes instructions for transmitting

20   identification of the television programming being displayed by the networked set-top box and instructions for displaying chat room messages submitted by other chat room members.

In general, in another aspect, the invention features a computer program, disposed on a computer readable

25   medium, for assigning a user to a network chat room. The program includes instructions for causing a processor to determine television programming viewed by a network user at a networked device and assign the network user to a chat room corresponding to the determined television programming.

30   In general, in another aspect, the invention features a computer program, disposed on a computer readable medium, for assigning a user to a chat room. The program includes instructions for causing a processor to provide a

user interface that displays television programming, transmit identification of the television programming to a network server, and present a chat room that includes messages received by the network server by other users

5   viewing the same television programming.

The details of one or more embodiments are set forth in the accompanying drawings and the description below. Other features, objects, and advantages of the invention will be apparent from the description and drawings, and from

10 the claims.

Drawing Descriptions

Fig. 1 is a block diagram of a computer system.

Fig. 2 shows a typical network computing environment.

15 Fig. 3 shows a screen shot of a browser displaying a webpage.

Fig. 4 shows a screen shot of a chat room.

Fig. 5 is a block diagram of a set-top box.

Fig. 6 is a flow diagram illustrating transmission

20 of a message including links that select a television channel.

Fig. 7 is a flow chart of a process for tuning a set-top box in response to user selection of a link.

Fig. 8 shows a diagram of a screen display including

25 a chat control.

Fig. 9 shows a diagram of a screen display of chat room for a displayed TV show.

Fig. 10 is a flow chart of a process for assigning a user to a chat room based on the set-top box tuner.

30 Fig. 11 shows a screen display of a buddy list showing TV shows that users are watching.

Figs. 12A-12B are flow diagrams illustrating transmission of information to users on a buddy list.

Fig. 13 is a flow chart of a process for receiving viewing information relating to users on a buddy list.

5   Fig. 14 is a flow chart of a process for updating buddy list viewing information.

Like reference numbers and designations in the various drawings indicate like elements.

Detailed Description

10 The Set-Top Device

Fig. 5 shows a set-top box 500. The set-top box 500 receives TV signals from a TV source 504 such as a cable, satellite, or conventional TV provider. The box 500 includes a tuner 510 to select a TV channel for viewing.

15 The selected TV channel may be digital in the case of a satellite TV source or analog in the case of most cable TV sources. The box 500 can include an analog-to-digital converter 512 to permit digital processing of the TV images regardless of the TV source.

20   The box 500 includes a network communication card 514 to communicate with a network server 506 such as an ISP (Internet Service Provider). The box 500 also includes browser client software 516 for communicating with the server, for example, by sending and receiving HTTP

25 (HyperText Transfer Protocol) messages. Additionally, the box 500 includes communication protocol software (e.g., TCP/IP) and an operating system.

The box 500 constructs a display that can include information received from the server 506 and/or from the TV

30 source 504. The box 500 sends the constructed display to a TV 502 or monitor via an output port 517. In one

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embodiment, the browser 516 (e.g., Liberate's TV Navigator) integrates server and TV information by processing an HTML-like (HyperText Manipulation Language) tag (e.g. <IMG SRC = "TV" x=0 y=0>) that instructs the browser 516 to place

5   incoming TV images on the screen at specified coordinates. By modifying a received web-page to include this tag, the browser 516 can display the TV data received from the TV source 504 in conjunction with information provided by the server 506. Alterations to the screen, such as adding user

10 interface controls or moving and/or resizing the TV image also can be performed by altering instructions of a web-page displayed by the browser. The box 500 may store a default web-page that makes the received TV signal a full-screen background image 518 with overlayed user interface controls

15 520. The controls 520 can correspond to functions such as initiating a session with the server 506.

Tuning Links

Fig. 6 shows a set-top box 600a in Washington, D.C. sending a message 600 to a set-top box 600b in Boston via

20 the server 506. The message 600 could be part of an e-mail message, a chat room entry, an instant message, etc. The message includes links 618 that can control the tuner of a set-top box. Each link 618, 620 can include a reference to a television channel feature (e.g., "<A TVREF=FOX>") and

25 instructions for displaying the link on a display (e.g,. "<UNDERLINE> FOX </UNDERLINE>"). Like conventional links, the link 618, 620 may by represented by one or more graphic images instead of simple text. For example, the link 618, 620 may appear as a web banner, for example, advertising a

30 TV show that is displayed when a user visits a URL.

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Unlike traditional links that cause a browser to load specified files or an Internet URL (Universal Resource Locator) when selected, the links 618 in the message 600 can change the channel of the set-top box. This enables friends
5   to exchange messages that include links to a particular network 618 or TV show 616. When selected, the browser tunes the set-top box to the channel corresponding to the network or show specified by a link.

The link may, but need not, refer to a specific
10 channel (e.g., "Jim, turn to channel 38"). In fact, referring to a specific channel may be undesirable as different geographic locations may offer a given TV network on different channels. For example, an NBC affiliate in Boston may be on channel "10" while the D.C. NBC affiliate
15 broadcasts on channel "28". Additionally, channel numbers may vary based on the TV source. That is, the D.C. NBC affiliate may broadcast in the frequency band for channel "28" but may be programmed and presented to viewers as channel "4" by a D.C. cable TV company. Thus, providing a
20 link that references a network instead of a particular channel increases the likelihood the link will appropriately change the channel when transmitted to users that receive TV signals from different sources.

However, merely specifying a network may also be
25 undesirable because TV schedules typically vary from location to location. For example, an NBC TV network affiliate in Boston may broadcast a movie while the NBC TV network affiliate in Washington D.C. broadcasts a talk show. Further, the same show may be shown by different networks in
30 different locations. That is, in some areas a show may appear on the ABC television network while in other locations the same show is broadcast by FOX networks. Finally, a given show may be broadcast at different times in

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different time zones. To account for these variations, set-top software (e.g., extensions to the browser) can determine a channel corresponding to a link based on a wide variety of channel features instead of the channel number or network

5   name, for example, by using an electronic programming guide (EPG).

As shown in FIG. 6, the set-top boxes 600A, 600B have received different EPGs 602A, 602B. An EPG is essentially an electronic version of a TV guide. Different

10 EPGs can include different information. For example, an EPG can include a show title 610, channel number 606, network 608, and start 612 and stop 614 times of different TV programs. The EPG also can include other data such as ratings (e.g., "R" and "PG-13") and/or a brief description

15 of the show such as its type (e.g., "sitcom" or "drama") and/or actors that appear in the show. In one embodiment, broadcasters transmit EPG guides to set-top boxes using the vertical blanking interval (VBI) of traditional video signals. Typically, information included in the VBI does

20 not affect the image displayed on a TV. Thus, the VBI provides a convenient buffer for unobtrusively transmitting information to set-top boxes 600A, 600B. In other embodiments, the set-top boxes 600A, 600B can receive an EPG from the server 506 based on the billing address of the set-

25 top box user or a local server access phone number dialed by the set-top box. In yet other embodiments, the EPG may be transmitted by satellite.

A set-top box 500B can use the EPG information to select a channel corresponding to a particular link from the

30 shows currently available from the TV source. For example, in Fig. 6, the set-top box 500B in Boston has received message including a link 616 referring to the TV show "Friends" from a user in D.C. Looking up the show "Friends"

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in the "program" column of the Boston set-top box's 600B EPG 602B yields a tuning channel of "10".

The message also includes a link 618 referring to the FOX network. Selection of this link and the ensuing

5   lookup of "FOX" in the "channel name" column of the EPG 602B tunes to the Boston set-top box 500B to channel "11".

In general, the links can refer to any information included in the EPG such as actors or actresses appearing in shows (e.g., "Meryl Streep is a very good actress").

10 Software can examine each column of the EPG until a match (or a near match) is found and can change the channel correspondingly. In this example, the set-top box would search for a show starring Meryl Streep, and, if found, would tune the TV to channel for that show.

15 Fig. 7 shows a process for tuning the set-top system based on a received link. After receiving an EPG 700, user selection of a link 704 causes set-top box software to determine tuning information corresponding to the link 706, for example, by looking-up the information in an EPG. The

20 software tunes 710 the set-top box to the determined tuning channel.

In some embodiments, the process may enforce parental controls 708 over the type of programming different family members can view. For example, America Online

25 enables a parent to create user names for family members and associate different privileges to each of the user names. For example, a parent can configure the family member accounts such that a child has privilege only to see TV programs having a "G" (General) rating while a teenager has

30 privileges to see TV programs having a "G" or "PG" (Parental Guidance suggested) rating.

Potentially, a given show will not be immediately available when a user selects a link. For example, a user

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may select a TV show's link included an e-mail message
written much earlier in the day. In this case, a lookup for
the show in the current time period would fail. The set-top
box, however, can store the link and remind a user and/or
5   automatically tune the set-top box when the linked TV show
is scheduled for broadcast.

In some embodiments, the set-top box transmits 712 a
message to the server whenever a user changes channels.
This enables the server to track viewers and supports
10   features such as TV buddy lists and TV chat rooms.

TV Chat Rooms

The display shown in FIG. 9 illustrates how a
display can simultaneously present a television program and
a chat room. The television program and chat room may be
15   independent. That is, a user could change TV shows with
changing chat rooms and vice-versa.

In other embodiments, software may control the chat
room the user is a member of so that it corresponds to the
viewed television program. For example, as shown in FIG. 8,
20   a display may include a region for displaying a received TV
signal 800 (e.g., Gilligan's Island) and a "TV chat" control
802. Selecting the control automatically places a user in a
chat room corresponding to the particular TV show. As shown
in Fig. 9, when a user watching "Gilligan's Island" selects
25   the TV chat control, the server places the user in a
"Gilligan's Island" chat room 902 with other users viewing
the show. The users can then share their comments on the
show in real time by submitting messages to the server for
display in the chat room window. The browser can configure
30   the display such that the chat room text window 902 and the
TV show display 900 can be viewed simultaneously.

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Fig. 10 shows a process for automatically assigning users to a chat room based on the TV show a viewer is currently watching. Like the processing of links described above, the chat room assignment process can use information in the EPG 1000 to determine the television programming a user is viewing. When a user selects a TV chat button or other user interface control 1002, the process determines the currently tuned channel (e.g., channel "38"). The process then uses the EPG to identify the show corresponding to this channel 1004. For example, the process can use an EPG to lookup the TV show being broadcast on channel "38" at the current time. After identifying the TV show 1006, the set-top box can transmit a request to join a chat for the identified TV show 1006. The message may include the name of the TV show, the channel number, the network or other information the server can use to determine which show the viewer is watching. The server can then place the user in the chat room associated with that TV show.

As described, each time the user changes channels 1008, the set-top box can transmit a message to the server 1010, 1012 indicating the new channel the viewer is watching. If the user is already in a TV chat room, the server can move the user to chat room corresponding to the new channel. For example, if the user tunes from "Love Boat" to "Fantasy Island", the user can be moved from the Love Boat chat room to the Fantasy Island chat room. The client may wait a short period of time before transmitting a "Channel Changed" message to see if the user changes channel again quickly. This reduces the number of messages produced when a viewer "channel surfs" for an interesting program.

Buddy List

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Fig. 11 shows a set-top box display that includes a TV program 1102 and a TV-enhanced buddy list 1110. Like conventional buddy lists, a user can define a list of server system user names. In addition to showing whether users on

5   the list are currently logged on to the server, the enhanced buddy-list shows the TV show or network 1110 each listed buddy 1108 is watching. As shown, the TV show and/or network 1110 can be displayed as a link. By selecting the link, a user can watch the same show that a friend is

10 watching.

Figs. 12A and 12B shows server data 1204 used to provide the enhanced buddy list functions. The data 1204 includes a list 1206 of logged-in users and the TV show and/or network that each user is currently watching. The

15 server also stores a buddy list 1208 for each user. The buddy list 1208 may be permanently stored on the server 1204 or transmitted to the server 1204 by a set-top box when a user logs-on. As shown in Fig. 12A, when a user changes channels, set-top box software transmits a message to the

20 server including the name of the show and/or the network the user is presently viewing. As shown in Fig 12B, the server 1204 updates the user list 1206 to reflect the new viewing information. The server also transmits a message 1212 to each logged-in user that included the channel-changing user

25 in his or her list.

Fig. 13 shows a process for providing buddy lists that display the show or network a user is viewing. After a user logs-on, the set-top box software transmits the user's buddy list 1300 to the server. The server responds by

30 sending the set-top box TV viewing information for each member of the user's buddy list 1302, 1304. The transmitted information, however, will quickly be outdated as members of the buddy list log-on and off, change channels, or turn on a

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"privacy" feature that stops the server from broadcasting the TV show they are watching.

Fig. 14 shows a process for updating the buddy list information initially transmitted. As each user changes channels 1402, the user's set-top box transmits a message to the server describing the change 1404. The server uses these messages to update its user list 1406. After updating 1404, the server broadcasts 1410 the change to each logged-on user who included the channel changing user in their buddy list. Viewers can turn off this feature if they do not want others to see the name of the TV show they are watching.

A network user may have more than one buddy list. For example, the user may specify other users for a general buddy list, a buddy list for a particular network, and/or a buddy list for a particular television show or sports team. The server may provide chat rooms for members of a user's buddy list. For example, a user may click a "buddy chat" button on a graphical user interface and be assigned to a chat room for the buddies on the list. The graphical user interface may display different buddy lists for user selection based on the show being viewed. For example, when a user tunes to "I Love Lucy", the user's "I Love Lucy" buddies will appear with an option for a buddy chat for those users.

The techniques, methods and systems described here may find applicability in any computing or processing environment in which electronic content may be viewed, accessed or otherwise manipulated. Implementations may vary considerably. For example, in some embodiment, EPGs for each TV source are stored centrally at the server instead of being distributed to each set-top box. In this embodiment, the EPG lookup functions are handled by messages exchanged

by the server and clients. In general, tasks process may be distributed between client and server in a variety of ways.

Various implementations of the systems and techniques described here may be realized in digital electronic circuitry, or in computer hardware, firmware, software, or in combinations thereof. A system or other apparatus that uses one or more of the techniques and methods described here may be implemented as a computer-readable storage medium, configured with a computer program, where the storage medium so configured causes a computer system to operate on input and/or generate output in a specific and predefined manner. Such a computer system may include one or more programmable processors that receive data and instructions from, and transmit data and instructions to, a data storage system, and suitable input and output devices.

Each computer program may be implemented in a high-level procedural or object-oriented programming language, or in assembly or machine language if desired; and in any case, the language may be a compiled or interpreted language. Suitable processors include, by way of example, both general and special purpose microprocessors.

Generally, a processor will receive instructions and data from a read-only memory and/or a random access memory. Storage devices suitable for tangibly embodying computer program instructions and data include all forms of non-volatile memory, including semiconductor memory devices, such as EPROM, EEPROM, and flash memory devices; magnetic disks such as internal hard disks and removable disks; magneto-optical disks; and CD-ROM disks.

Any of the foregoing may be supplemented by, or implemented in, specially-designed ASICs (application-specific integrated circuits).

A number of embodiments of the present invention have been described. Nevertheless, it will be understood that various modifications may be made without departing from the spirit and scope of the invention. Accordingly, other embodiments are within the scope of the following claims.